

WHAT IS CLAIMED IS:

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1. An ammunition article, comprising:  
a molded plastic cartridge casing body having a first end and a second end;  
and  
5 a projectile attached to the first end of the cartridge casing body,  
wherein the cartridge casing body is molded around at least a portion of the  
projectile.

10 2. The ammunition article as set forth in claim 1, wherein the cartridge  
casing body includes an interior volume including a first interior portion defined  
by the portion of the projectile and a second interior portion having a smaller  
diameter than the first interior portion and being separated from the first interior  
portion by a shoulder, the shoulder being of sufficient size to prevent axial  
movement of the projectile into the second interior portion.

15 3. The ammunition article as set forth in claim 1, wherein the projectile is  
attached to the cartridge casing body by a heat bond of sufficient strength to  
prevent axial movement of the projectile relative to the cartridge casing body prior  
to firing.

4. The ammunition article as set forth in claim 1, wherein the projectile is  
attached to the cartridge casing body by an adhesive bond of sufficient strength to

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prevent axial movement of the projectile relative to the cartridge casing body prior to firing.

5. The ammunition article as set forth in claim 1, wherein the projectile is attached to the cartridge casing body by a flange on the cartridge casing body 5 extending into a recess in the projectile.

6. The ammunition article as set forth in claim 1, further comprising a base attached to the second end of the cartridge casing body.

7. The ammunition article as set forth in claim 6, further comprising a propellant charge inside the cartridge casing body.

10 8. The ammunition article as set forth in claim 7, further comprising a primer for igniting the propellant.

9. The ammunition article as set forth in claim 7, further comprising an electronic ignition for igniting the propellant.

15 10. The ammunition article as set forth in claim 6, wherein the base is reusable and the cartridge casing body is replaceable.

11. The ammunition article as set forth in claim 6, wherein the base is a molded plastic base.

12. The ammunition article as set forth in claim 6, wherein the base is mechanically attached to the cartridge casing body.

5 13. The ammunition article as set forth in claim 12, wherein the base is attached to the cartridge casing body by screw threads.

14. The ammunition article as set forth in claim 12, wherein the base is attached to the cartridge casing body by a tongue and groove arrangement.

10 15. The ammunition article as set forth in claim 12, wherein the base is attached to the cartridge casing body by an interference fit.

16. The ammunition article as set forth in claim 6, wherein the base is attached to the cartridge casing body by adhesive.

17. The ammunition article as set forth in claim 6, wherein the base is attached to the cartridge casing body by a heat bond.

18. The ammunition article as set forth in claim 6, wherein the base is attached to the cartridge casing body by an ultrasonic weld.

19. The ammunition article as set forth in claim 1, wherein the cartridge casing body is formed of a combustible material.

5 20. The ammunition article as set forth in claim 1, wherein a wall thickness of the cartridge casing body follows cannelure contours of the projectile.

10 21. An ammunition article, comprising:  
a cartridge casing body having a first end and a second end;  
a projectile attached to the first end of the cartridge casing body; and  
a single piece, molded plastic base, the base being attached to the second end of the cartridge casing body.

22. The ammunition article as set forth in claim 21, wherein the cartridge casing body is made of metal.

15 23. The ammunition article as set forth in claim 21, wherein the cartridge casing body is made of plastic.

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24. The ammunition article as set forth in claim 21, further comprising a propellant charge inside the cartridge casing body.

25. The ammunition article as set forth in claim 24, further comprising a primer for igniting the propellant.

5 26. The ammunition article as set forth in claim 24, further comprising an electronic ignition for igniting the propellant.

27. The ammunition article as set forth in claim 21, wherein the base is reusable and the cartridge casing body is replaceable.

10 28. The ammunition article as set forth in claim 21, wherein the base is mechanically attached to the cartridge casing body.

29. The ammunition article as set forth in claim 21, wherein the base is attached to the cartridge casing body by screw threads.

30. The ammunition article as set forth in claim 21, wherein the base is attached to the cartridge casing body by a tongue and groove arrangement.

31. The ammunition article as set forth in claim 21, wherein the base is attached to the cartridge casing body by an interference fit.

32. The ammunition article as set forth in claim 21, wherein the base is attached to the cartridge casing body by adhesive.

5 33. The ammunition article as set forth in claim 21, wherein the base is attached to the cartridge casing body by a heat bond.

34. The ammunition article as set forth in claim 21, wherein the base is attached to the cartridge casing body by an ultrasonic weld.

10 35. The ammunition article as set forth in claim 21, wherein the cartridge casing body is formed of a composite material.

36. The ammunition article as set forth in claim 21, wherein the cartridge casing body is formed of a combustible molded material.

15 37. An ammunition article, comprising:  
a molded plastic cartridge case body having a closed front end and a second end.

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38. The ammunition article as set forth in claim 37, wherein the closed front end includes walls that reduce in thickness toward an axial center of the closed front end.

39. The ammunition article as set forth in claim 37, wherein the closed front end includes at least one stress concentrator for causing preferential tearing of the closed front end at the at least one stress concentrator.

40. The ammunition article as set forth in claim 37, further comprising a base attached to the second end of the cartridge casing body.

41. The ammunition article as set forth in claim 40, further comprising a propellant charge inside the cartridge casing body.

42. The ammunition article as set forth in claim 41, further comprising a primer for igniting the propellant.

43. The ammunition article as set forth in claim 41, further comprising an electronic ignition for igniting the propellant.

15 44. The ammunition article as set forth in claim 40, wherein the base is reusable and the cartridge casing body is replaceable.

45. The ammunition article as set forth in claim 40, wherein the base is a molded plastic base.

46. The ammunition article as set forth in claim 40, wherein the base is mechanically attached to the cartridge casing body.

5 47. The ammunition article as set forth in claim 46, wherein the base is attached to the cartridge casing body by screw threads.

48. The ammunition article as set forth in claim 46, wherein the base is attached to the cartridge casing body by a tongue and groove arrangement.

10 49. The ammunition article as set forth in claim 46, wherein the base is attached to the cartridge casing body by an interference fit.

50. The ammunition article as set forth in claim 40, wherein the base is attached to the cartridge casing body by adhesive.

51. The ammunition article as set forth in claim 40, wherein the base is attached to the cartridge casing body by a heat bond.

52. The ammunition article as set forth in claim 40, wherein the base is attached to the cartridge casing body by an ultrasonic weld.

53. An ammunition article, comprising:

5      a molded plastic cartridge case body, the cartridge case body including a web dividing an internal volume of the body to define a lower cavity for receiving a propellant and an upper cavity for receiving a projectile, the web including an upwardly extending prong for being received in a corresponding recess in a base of the projectile to fasten the body to the projectile.

10     54. The ammunition article as set forth in claim 53, wherein the prong is attached in the recess by an interference fit.

55. The ammunition article as set forth in claim 53, wherein the prong is attached in the recess by interlocking structures on the prong and the recess.

56. The ammunition article as set forth in claim 53, wherein the prong is attached in the recess by an adhesive.

15     57. The ammunition article as set forth in claim 53, wherein the prong is attached in the recess by heat bonding.

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58. The ammunition article as set forth in claim 53, wherein the prong is attached in the recess by ultrasonic welding.

59. A method of making an ammunition article, comprising the steps of:  
molding plastic around at least a portion of a projectile to form a plastic  
5 cartridge casing body having a first end to which the projectile is attached and a  
second end.

60. The method as set forth in claim 59, wherein the plastic is molded around a core pull such that the core pull and the portion of the projectile define an interior volume of the plastic cartridge casing body, the method comprising the further step of removing the core pull from the plastic cartridge casing body.

61. The method as set forth in claim 60, wherein the core pull has a smaller diameter than the portion of the projectile such that the interior volume of the cartridge casing body includes a first interior portion defined by the portion of the projectile and a second interior portion having a smaller diameter than the first interior portion and being separated from the first interior portion by a shoulder, the shoulder being of sufficient size to prevent axial movement of the projectile into the second interior portion.

62. The method as set forth in claim 59, comprising the further step of heat bonding the projectile to the cartridge casing body.

63. The method as set forth in claim 59, comprising the further step of adhesive bonding the projectile to the cartridge casing body.

5 64. The method as set forth in claim 59, wherein the plastic is molded around the portion of the projectile such that the plastic enters a recess in the portion of the projectile and forms a flange on the cartridge casing body extending into the recess.

10 65. The method as set forth in claim 59, comprising the further step of attaching a base to the second end of the cartridge casing body.

66. The method as set forth in claim 65, comprising the further step of providing a propellant charge inside the cartridge casing body.

67. The method as set forth in claim 66, comprising the further step of providing a primer for igniting the propellant.

15 68. The method as set forth in claim 66, comprising the further step of providing an electronic ignition for igniting the propellant.

69. The method as set forth in claim 65, comprising the further step of molding the base from plastic.

70. The method as set forth in claim 69, wherein the base is molded from plastic prior to attaching the base to the cartridge casing body.

5 71. The method as set forth in claim 65, wherein the base is mechanically attached to the cartridge casing body.

72. The method as set forth in claim 71, wherein the base is attached to the cartridge casing body by screwing threads on the base together with threads on the cartridge casing body.

10 73. The method as set forth in claim 71, wherein the base is attached to the cartridge casing body by connecting a tongue and groove arrangement between attachable portions of the base and the cartridge casing body.

74. The method as set forth in claim 71, wherein the base is attached to the cartridge casing body by an interference fit.

15 75. The method as set forth in claim 65, wherein the base is attached to the cartridge casing body by adhesive joining.

76. The method as set forth in claim 65, wherein the base is attached to the cartridge casing body by heat bonding.

77. The method as set forth in claim 65, wherein the base is attached to the cartridge casing body by ultrasonic welding.

5 78. A method of making an ammunition article, comprising the steps of: molding plastic to form a single piece, molded plastic base; and attaching the base to an end of a cartridge casing body.

79. The method as set forth in claim 78, comprising the further step of molding plastic to form the cartridge casing body.

10 80. The method as set forth in claim 78, comprising the further step of providing a propellant charge inside the cartridge casing body.

81. The method as set forth in claim 80, comprising the further step of providing a primer for igniting the propellant.

15 82. The method as set forth in claim 80, comprising the further step of providing an electronic ignition for igniting the propellant.

83. The method as set forth in claim 78, wherein the base is mechanically attached to the cartridge casing body.

84. The method as set forth in claim 83, wherein the base is attached to the cartridge casing body by screwing threads on the base together with threads on 5 the cartridge casing body.

85. The method as set forth in claim 83, wherein the base is attached to the cartridge casing body by connecting a tongue and groove arrangement between attachable portions of the base and the cartridge casing body.

86. The method as set forth in claim 83, wherein the base is attached to 10 the cartridge casing body by an interference fit.

87. The method as set forth in claim 78, wherein the base is attached to the cartridge casing body by adhesive joining.

88. The method as set forth in claim 78, wherein the base is attached to the cartridge casing body by heat bonding.

15 89. The method as set forth in claim 78, wherein the base is attached to the cartridge casing body by ultrasonic welding.

90. A method of making an ammunition article, comprising the steps of:  
molding plastic around a core pull to form a molded plastic cartridge case  
body having a closed front end and a second end; and  
removing the core pull from the cartridge casing body.

5 91. The method as set forth in claim 90, wherein the plastic is molded  
such that closed front end includes walls that reduce in thickness toward an axial  
center of the closed front end.

10 92. The method as set forth in claim 90, wherein the plastic is molded  
such that the closed front end includes at least one stress concentrator for causing  
preferential tearing of the closed front end at the at least one stress concentrator.

93. The method as set forth in claim 90, comprising the further step of  
attaching a base to the second end of the cartridge casing body.

15 94. The method as set forth in claim 90, comprising the further step of  
providing a propellant charge inside the cartridge casing body.

95. The method as set forth in claim 94, comprising the further step of  
providing a primer for igniting the propellant.

96. The method as set forth in claim 94, comprising the further step of providing an electronic ignition for igniting the propellant.

97. The method as set forth in claim 93, comprising the further step of molding the base from plastic.

5 98. The method as set forth in claim 97, wherein the base is molded from plastic prior to attaching the base to the cartridge casing body.

99. The method as set forth in claim 93, wherein the base is mechanically attached to the cartridge casing body.

100. The method as set forth in claim 99, wherein the base is attached to 10 the cartridge casing body by screwing threads on the base together with threads on the cartridge casing body.

101. The method as set forth in claim 99, wherein the base is attached to the cartridge casing body by connecting a tongue and groove arrangement between attachable portions of the base and the cartridge casing body.

15 102. The method as set forth in claim 99, wherein the base is attached to the cartridge casing body by an interference fit.

103. The method as set forth in claim 93, wherein the base is attached to the cartridge casing body by adhesive joining.

104. The method as set forth in claim 93, wherein the base is attached to the cartridge casing body by heat bonding.

5 105. The method as set forth in claim 93, wherein the base is attached to the cartridge casing body by ultrasonic welding.

106. A method of making an ammunition article, comprising:  
molding plastic to form a molded plastic cartridge case body, the cartridge case body including a web dividing an internal volume of the body to define a lower cavity for receiving a propellant and an upper cavity for receiving a projectile, the web including an upwardly extending prong; and  
causing the upwardly extending prong to be received in a corresponding recess in a base of the projectile to fasten the body to the projectile.

107. The method as set forth in claim 106, wherein the prong is attached 15 in the recess by an interference fit.

108. The method as set forth in claim 106, wherein the prong is attached in the recess by interlocking structures on the prong and the recess.

109. The method as set forth in claim 106, wherein the prong is attached in the recess by an adhesive.

110. The method as set forth in claim 106, wherein the prong is attached in the recess by heat bonding.

5 111. The method as set forth in claim 106, wherein the prong is attached in the recess by ultrasonic welding.

112. The method as set forth in claim 106, wherein the plastic is molded around a core ~~pull~~ to form the lower cavity.

10 113. The method as set forth in claim 106, wherein the plastic is molded around at least a portion of a projectile to form the upper cavity and the prong and to cause the prong to be received in the corresponding recess.

114. An ammunition article comprising:  
15 a projectile having cannelure contours; and  
a molded cartridge casing body molded around at least a portion of the projectile such that a portion of a wall of the cartridge casing body follows the cannelure contours of the projectile.

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115. The ammunition article as set forth in claim 114, wherein the portion of the wall has a substantially constant thickness.

